Unit 5 : Measures

Friendly Notes

Looking Back

The centimeter (cm), meter (m), and kilometer (km) are metric units of length.
The yard (yd) and inch (in.) are other units of length.

1 m = 100 cm	1 yd = 3 ft
1 km = 1,000 m	1 ft = 12 in.

1. Write 7 m 87 cm in centimeters.

   7 m 87 cm = 700 cm + 87cm
   = 787 cm

   > 7 m = 7 × 100 cm
   > = 700 cm

2. Write 654 cm in meters and centimeters.

   654 cm = 6 m 54 cm

   > 654 cm = 600 cm + 54 cm
   > 600 cm = 6 m
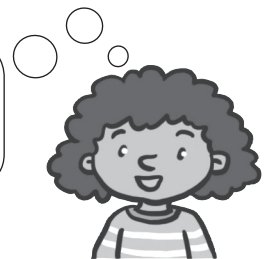
3. Write 3 km 899 m in meters.

   3 km 899 m = 3,000 m + 899 m
   = 3,899 m

   > 3km = 3 × 1,000 m
   > = 3,000 m

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4. Write 5,231 m in kilometers and meters.

5,231 m = 5 km 231 m

> 5,231 m = 5,000 m + 231 m

5. Write 11 yd in feet.

$11 \text{ yd} = 11 \times 3 \text{ ft}$

$= 33 \text{ ft}$

> 1 yd = 3 ft
> 5,000 m = 5 km
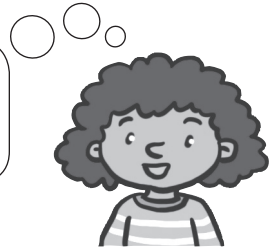
6. Write 14 yd 6 ft in feet.

14 yd 6 ft = 42 ft + 6 ft

$= 48 \text{ ft}$

> $14 \text{ yd} = 14 \times 3 \text{ ft}$
> $= 42 \text{ ft}$

7. Write 146 ft in yards.

146 ft = 48 yd 2 ft

> 146 ft
> ╱   ╲
> 48 yd   2 ft

8. Write 4 ft 7 in. in inches.

4 ft 7 in. = 48 in. + 7 in.

$= 55 \text{ in.}$

> 1 ft = 12 in.
> $4 \text{ ft} = 4 \times 12 \text{ in.}$
> $= 48 \text{ in.}$

The gram (g) and kilogram (kg) are metric units of mass.
The pound (lb) and ounce (oz) are other units of weight.

1 kg = 1,000 g   1 lb = 16 oz

9. Write 5 kg 56 g in grams.

    5 kg 56 g = 5,000 g + 56 g
              = 5,056 g

    1 kg = 1,000 g
    5 kg = 5 × 1,000 g
         = 5,000 g

10. Write 1,001 g in kilograms.

    1,001 g = 1 kg 1 g

    1,001 g = 1,000 g + 1 g
    1,000 g = 1 kg

11. Write 4 lb 10 oz in ounce.

    4 lb 10 oz = 64 oz + 10 oz
               = 74 oz

    1 lb = 16 oz
    4 lb = 4 × 16 oz
         = 64 oz

12. Write 86 oz in pounds and ounce.

    80 oz = 5 lb
    86 oz = 5 lb 6 oz

    86 oz
    /   \
    80 oz   6 oz

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The second, minute, hour, day, week, and year are units of time.

1 year = 12 months   1 hour = 60 minutes
1 week = 7 days   1 minute = 60 seconds
1 day = 24 hours

13. Write 4 years in months.
    4 years = 4 × 12
            = 48 months

14. Write 3 weeks in days.
    3 weeks = 3 × 7
            = 21 days

15. Write 9 minutes in seconds.
    9 minutes = 9 × 60
              = 540 seconds

The milliliter (ml) and liter (L) are metric units of capacity.
The gallon (gal), quart (qt), pint (pt), and cup (c) are other units of capacity.

1 L = 1,000 ml   1 qt = 2 pt
1 gal = 4 qt   1 pt = 2c

16. Write 8 L 552 ml in milliliters.
    8 L 552 ml = 8,000 ml + 552 ml
               = 8, 552 ml

1 L = 1,000 ml
8 L = 8 × 1,000 ml
    = 8,000 ml

Adding and Subtracting Measures

1. 1 kg 300 g + 2 kg 900 g
   = 4 kg 200 g

   > 1 kg + 2 kg = 3 kg
   > 300 g + 900 g = 1 kg 200 g
   > 3 kg + 1 kg 200 g = 4 kg 200 g

2. 9 gal 2 qt — 5 gal 3 qt
   = 3 gal 3 qt

   > 1 gal = 4 qt
   > 9 gal 2 qt = 8 gal 6 qt
   > 8 gal 6 qt — 5 gal 3 qt = 3 gal 3 qt

3. What is the total capacity of 1 L 45 ml and 8 L 672 ml?

   > $$1 \text{ L } 45 \text{ ml} \xrightarrow{+ 8 \text{ L}} 9 \text{ L } 45 \text{ ml} \xrightarrow{+ 672 \text{ ml}} 9 \text{ L } 717 \text{ ml}$$

   1 L 45 ml + 8 L 672 ml = 9 L 717 ml

4. What is the difference in length between 9 km 4 m and 2 km 600 m?

   > 9 km 4 m = 8 km + 1,000 m + 4 m
   >   = 8 km 1,004 m

   > $$8 \text{ km } 1{,}004 \text{ m} \xrightarrow{- 2 \text{ km}} 6 \text{ km } 1{,}004 \text{ m} \xrightarrow{- 600 \text{ m}} 6 \text{ km } 404 \text{ m}$$
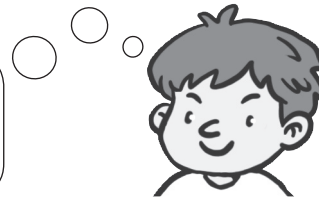
   9 km 4 m — 2 km 600 m = 6 km 404 m

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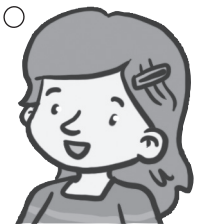
Multiplying and Dividing Measures

1. 2 kg 200 g × 2 = 4 kg 400 g

> 200 g × 2 = 400 g
> 2 kg × 2 = 4 kg

2. 6 m 25 cm ÷ 5 = 1 m 25 cm

> 6 m ÷ 5 = 1 m remainder 1 m
> 1 m = 100 cm
> 100 cm + 25 cm = 125 cm
> 125 cm ÷ 5 = 25 cm

Measures and Fractions

1. $\frac{1}{2}$ km $= \frac{1}{2} \times 1{,}000$

$\qquad = 500$ m

2. $1\frac{1}{4}$ lb $= 1$ lb $+ \frac{1}{4}$ lb

$\qquad = 16$ oz $+ \frac{1}{4} \times 16$

$\qquad = 16$ oz $+ 4$ oz

$\qquad = 20$ oz

3. $2\frac{3}{4}$ hours $= 2$ hours $+ \frac{3}{4}$ hours

$\qquad = 120$ minutes $+ \frac{3}{4} \times 60$

$\qquad = 120$ minutes $+ 45$ minutes

$\qquad = 165$ minutes